REMARKS/ARGUMENTS

The claims are 1, 2 and 4-7. Claim 1 has been amended to better define the invention and new claims 6 and 7 dependent on claims 4 and 1, respectively, have been added. Support for the claims may be found, *inter alia*, in the disclosure at pages 2, 4, 6-7 and FIG. 2. Reconsideration is expressly requested.

Claims 1-2 were rejected under 35 U.S.C. 103(a) as being unpatentable over *Luinstra et al. UK Patent Application No. GB 2,221,853* in view of *Bartz et al. U.S. Patent No. 5,494,003* and *Crothers, Jr. U.S. Patent No. 5,169,604*. The remaining claims 4 and 5 were rejected under 35 U.S.C. 103(a) as being unpatentable over *Luinstra et al.* in view of *Bartz et al.* and *Crothers, Jr.* and further in view of *Wunderlich et al. U.S. Patent No. 3,822,337*.

This rejection is respectfully traversed.

As set forth in claim 1 as amended, Applicant's invention provides a fission or splitting reactor for a Claus plant system

having a boiler lined with refractory material which boiler has a combustion chamber having an inflow opening for a mixture of heating gas, air and acidic gas containing H_2S, the catalyst chamber having a catalyst bed and a chamber on the outflow-side having a gas outlet for hot process has that contains elemental sulfur.

The catalyst bed 3 constitutes a bed of **loose catalyst bulk material**, and the catalyst chamber 10 is delimited on both sides by **a plurality of** gas-permeable checker bricks 14. See FIG. 2.

A Claus system involves industrial devices on a large technical scale, which it is respectfully submitted cannot easily be compared with other apparatuses for chemical catalysis.

The primary reference to *Luinstra et al.* discloses a splitting reactor for a Claus system in which a boiler lined in refractory manner is disposed with a combustion chamber, a catalyst chamber, and a chamber on the outflow-side lying next to one another. More specifically, a catalyst structure is described that is referred to as a whole as being rigid and

permeable. See third full paragraph on page 3 of *Luinstra et al.*, a "rigid permeable catalyst structure." Also in connection with the placement of particles between two vertical screens, *Luinstra et al.* provides a rigid, permeable catalyst arrangement. See page 5, fifth full paragraph.

It is respectfully submitted that a person skilled in the art derives from *Luinstra et al.* that the catalyst is supposed to be configured as a type of catalyst mat or as a catalyst insert, whereby the mat or the insert is supposed to be inserted into the boiler as a complete unit (a "rigid permeable catalyst structure"). A catalyst chamber that is delimited on both sides by a plurality of gas-permeable checker bricks that have oblong holes, whereby the interstice formed between them is filled with a loose fill of catalyst material and whereby the loose fill can be filled in through a fill-in opening between the checker bricks, is nowhere disclosed or suggested. In addition, this configuration is nowhere disclosed or suggested taking any of the other prior art cited by the Examiner into consideration either.

Specifically, the secondary reference to *Bartz et al.*

relates to a water boiler that includes an infrared burner having a perforated ceramic plate. As an initial matter, it should be noted that a water boiler for household use is not comparable with a boiler of a large technical Claus system, so it is respectfully submitted that a person skilled in the art would not easily consider transferring individual characteristics of a water boiler for household use to a boiler of a large technical Claus system.

Bartz et al. concerns itself with the problem of providing a water boiler having an infrared burner, whose waste gas has only small proportions of NO_x. The water boiler (10) is oriented perpendicularly (see column 1, line 58), whereby the combustion of gas and combustion air takes place directly at a perforated ceramic plate (16) that is consequently part of the burner. The perforated ceramic plate is a circular disk that fills the entire inside diameter of a lower metal skirt. See column 2, lines 53 to 56 of *Bartz et al*. The perforated ceramic plate (16) is inserted into the skirt (15) from below, and attached by means of a circumferential ring (22), using bolts that are not shown in the drawing. See column 4, lines 5 to 7 of *Bartz et al*.

Thus, *Bartz et al.* refers to a special configuration of a **burner** in a **vertically oriented water boiler**, whereby a single disk that fills the entire diameter is attached by means of a clamping ring. Therefore, it is respectfully submitted that *Bartz et al.* must be viewed as being foreign to the type of system to which Applicant's claim 1 as amended is directed, so that a person skilled in the art has no recognizable reason for taking out and transferring individual characteristics of *Bartz et al.* into such a system.

Even if *Bartz et al.* were to be looked at together with others, which it is respectfully submitted would not be obvious, it is respectfully submitted that a person skilled in the art would consider only a rigid, permeable catalyst structure (see *Luinstra et al.* at page 5, lines 16 to 18), in which perforated ceramic plates, which, as round disks, fill the entire inner diameter of the boiler, are used as vertical screens. A person skilled in the art therefore receives no inspiration to delimit the catalyst chamber, on both sides, with a plurality of gas-permeable checker bricks that have elongated holes, and, in addition, to provide a catalyst bed of a loose material that is

separate from these checker bricks as recited in Applicant's claim 1 as amended.

In addition, it is respectfully submitted that a person skilled in the art would also not take the *Crothers, Jr.* reference into consideration. *Crothers, Jr.* describes a catalyst having a replaceable carrier arrangement (16). See, in particular, FIGS. 4 and 6 of *Crothers, Jr.* In order to be able to take this carrier arrangement out as a complete unit and to reinsert it again, the entire upper half (see FIG. 4) of a housing section is removable. The configuration described is entirely unsuitable for introducing a loose catalyst bed into the housing, because the housing could then be filled only up to half its height before the bulk material falls out at the side. From a technical point of view, it is respectfully submitted that the characteristics are therefore fundamentally not transferable, and for this reason, a mantle-side filling opening in combination with a catalyst that has a catalyst bed is nowhere disclosed or suggested.

These differences are further emphasized by new claim 7,

dependent on claim 1, according to which the mantle-side filling opening is configured as a flange connector piece or flange tube.

The remaining reference to *Wunderlich et al.* which has been cited with respect to claim 4 (and claim 5 which depends on claim 4), has been considered but is believed to be no more relevant. In particular, it is respectfully submitted that, contrary to the Examiner's position, the characteristics of claim 4 are nowhere disclosed or suggested by *Wunderlich et al.* As recited in Applicant's claim 4, a branch line lined with refractory material is connected at the circumference of the outflow-side chamber, which line ends in a process gas line adjacent to the boiler, whereby a valve body is adjustably disposed in the end region of the branch line, with which valve body the amount flow of a hot gas stream that exits from the branch line can be regulated, and whereby the process gas line has **a cooler process gas flowing through it, which cools the valve body and a setting device assigned to the valve body.**

Applicant's invention as set forth in claim 4 therefore relates to an embodiment in which a cooler process gas is passed

to the hot gas stream branch out of the outflow-side chamber, in order to reduce thermal stresses. Not only does FIG. 3 of *Wunderlich et al.* describe a process that lies completely ahead of a Claus process, in *Wunderlich et al.* a process gas is drawn off from the outflow region of a reactor ("exhaust zone 203a"), which gas has a temperature of 1150°C, according to Table 3 of *Wunderlich et al.* This hot gas is then passed over a regulation flap (54) that is connected with a temperature control element. See column 7, lines 53 to 56 and column 8, lines 72 to 75 of *Wunderlich et al.*

A temperature control element is usually an electronic measurement circuit, so it is respectfully submitted that a person skilled in the art recognizes, in FIG. 3 of *Wunderlich et al.*, a flap 54 for a hot process gas that controls through-flow, whose degree of opening is adjusted by an electronic temperature control. It is also respectfully submitted that a person skilled in the art recognizes that no mixture of different gas streams is provided at the control flap (54) from the different line thickness that is selected in the figure for the gas-carrying line (52), on the one hand, and the connection line of the

temperature control device (53), on the other hand. It is respectfully submitted that even if one were to withdraw a waste gas from the combustion chamber (50) of *Wunderlich et al.* for further regulation, this waste gas would still be hotter, at 1350°C according to Table 3 at III, than the gas being passed through the bypass line 52.

In contrast, the cooling of the gas being branched out of the outflow-side chamber, provided according to Applicant's fission reactor recited in claim 4, allows the use of metallic materials for the valve body and the setting device as more specifically recited in new claim 6. Accordingly, it is respectfully submitted that claims 4, together with claims 5 and 6 which depend thereon, are patentable over the cited references for these additional reasons.

In summary, claim 1 has been amended and new claims 6 and 7 have been added. In view of the foregoing, it is respectfully requested that the claims be allowed and that this application be passed to issue.

Respectfully submitted,
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